What is claimed is:

1. A spread spectrum receiver receiving a spread spectrum signal spread in bandwidth by a predetermined spreading code, comprising;

a local oscillator for outputting a local signal with a predetermined frequency,

a local spreading code generating means for generating a local spreading code according to the spreading code of the received signal, and

a direct conversion circuit for generating a reference local signal based on the local signal from the local oscillator and the local spreading code from the local spreading generating means, generating two signals having a phase difference based on the received signal and the reference local signal, and despreading based on two signals having a phase difference.

2. A spread spectrum receiver as set forth in claim 1, wherein

the direct conversion circuit comprises:

a multiplier for multiplying the local signal by the local spreading code and outputting the same as the reference local signal,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting the

reference local signal in phase,

a first adder for adding the reference local signal and an output signal of the first shifter,

a second adder for adding the received signal and an output signal of the second phase shifter,

a first detector for detecting a signal level of an output of the first adder, and

a second detector for detecting a signal level of an output of the second adder.

3. A spread spectrum receiver as set forth in claim 2, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector and

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector.

4. A spread spectrum receiver as set forth in claim 2, wherein

the direct conversion circuit further comprises:

a third detector for detecting a signal level of the received signal.

5. A spread spectrum receiver as set forth in claim 4, wherein

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector,

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector, and

a third filter for performing a predetermined filtering processing with respect to an output signal of the third detector.

6. A spread spectrum receiver as set forth in claim 1, wherein

the direct conversion circuit comprises:

a modulator for modulating the local signal by the local spreading code and outputting the same as the reference local signal,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting the reference local signal in phase,

a first adder for adding the reference local signal and an output signal of the first shifter,

a second adder for adding the received signal and an output signal of the second phase shifter,

a first detector for detecting a signal level Of an output of the first adder, and

a second detector for detecting a signal level of an output of the second adder.

7. A spread spectrum receiver as set forth in claim 6, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector and

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector.

8. A spread spectrum receiver as set forth in claim 6, wherein

the direct conversion circuit further comprises:

a third detector for detecting a signal level of the received signal.

9. A spread spectrum receiver as set forth in claim 8, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector,

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector, and

a third filter for performing a predetermined filtering processing with respect to an output signal of the third detector.

10. A spread spectrum receiver as set forth in claim 6, wherein the modulator comprises a quadrature modulator.

11. A spread spectrum receiver as set forth in claim 1, wherein the spreading code included in the reference local signal is synchronized to the spreading code of the received signal.

12. A spread spectrum receiver as set forth in claim 1, wherein the carrier frequency of the received signal is approximately equal to the carrier frequency of the reference local signal.

13. A spread spectrum receiver as set forth in claim 2, wherein at least one of a first detector and second selector comprises a square-law detector.

14. A spread spectrum receiver as set forth in claim 4, wherein at least one of the first, second, and third detectors comprises a square-law detector.

15. A spread spectrum receiver as set forth in claim 6, wherein at least one of the first detector and second selector comprises a square-law detector.

16. A spread spectrum receiver as set forth in claim 8, wherein at least one of the first, second, and third

detectors comprises a square-law detector.

17. A spread spectrum receiver receiving a spread spectrum signal spread in bandwidth by a predetermined spreading code, comprising:

a local oscillator for outputting a local signal with a predetermined frequency,

a local spreading code tracking means for generating a local spreading code through a process of synchronization and tracking based on the received signal and local signal from local oscillator, and

a direct conversion circuit for generating a reference local signal based on the local signal from the local oscillator and the local spreading code from the local spreading tracking means, generating two signal having a phase difference based on the received signal and the reference local signal, and despreading based on two signals having a phase difference.

18. A spread spectrum receiver as set forth in claim 17, wherein

the local spreading code tracking means comprises:

a local spreading code generator for generating the local spreading code based on a value of a control signal,

a first phase adjusting means for delaying the

generated local spreading code by a predetermined time,

a second phase adjusting means for advancing the generated local spreading code by a predetermined time,

a first multiplier for multiplying the local signal by an output of the first phase adjusting means,

a second multiplier for multiplying the local signal by an output of the second phase adjusting means,

a first adder for adding the received signal and an output of the first multiplier,

a first detector for detecting an amplitude component of an output signal of the first adder,

a first envelope detecting means for detecting a first envelope of an output signal of the first detector,

a second adder for adding the received signal and an output of the second multiplier,

a second detector for detecting an amplitude component of an output signal of the second adder,

a second envelope detecting means for detecting a second envelope of an output signal of the second detector, and

a control signal generating means for generating the control signal so as to reduce the difference between the first envelope and second envelope close to zero.

19. A spread spectrum receiver as set forth in claim 17, wherein

the local spreading code tracking means comprises:

a local spreading code generator for generating the local spreading code based on a value of a control signal,

a first phase adjusting means for delaying the generated local spreading code by a predetermined time,

a second phase adjusting means for advancing the generated local spreading code by a predetermined time,

a first multiplier for multiplying the local signal by an output of the first phase adjusting means,

a second multiplier for multiplying the local signal by an output of the second phase adjusting means,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting an output signal of the first multiplier in phase,

a third phase shifter for shifting an output signal of the second multiplier in phase,

a fourth phase shifter for shifting the received signal in phase,

a first adder for adding an output signal of the first phase shifter and the output of the first

multiplier,

a second adder for adding the received signal and an output signal of the second phase shifter,

a third adder for adding the received signal and an output signal of the third phase shifter,

a fourth adder for adding the output signal of the second multiplier and an output signal of the fourth phase shifter,

a first detector for detecting a signal level of an output of the first adder,

a second detector for detecting a signal level of an output of the second adder,

a third detector for detecting a signal level of an output of the third adder,

a fourth detector for detecting a signal level of an output of the fourth adder,

a first filter for performing a predetermined filtering processing with respect to an output of a first detector,

a second filter for performing a predetermined filtering processing with respect to an output of a second detector,

a third filter for performing a predetermined filtering processing with respect to an output of a third detector,

a fourth filter for performing a predetermined filtering processing with respect to an output of a fourth detector,

a first norm circuit for computing a first norm based on outputs of the first and second filters,

a second norm circuit for computing a second norm based on outputs of the third and fourth filters, and

a control signal generating means for generating the control signal so as to reduce the difference between the first norm and second norm close to zero.

20. A spread spectrum receiver as set fourth in claim 19, wherein at least one of the first, second, third, and fourth detectors comprises a square-law detector.

21. A spread spectrum receiver as set fourth in claim 19, wherein the spreading code tracking means further comprises:

a means for removing D.C. offset from outputs of the first, second, third, and fourth filter.

22. A spread spectrum receiver as set forth in claim 17, wherein

the local spreading code tracking means comprises:

a first local spreading code generator for

generating an in-phase local spreading code based on a value of a control signal,

a second local spreading code generator for generating a quadration local spreading code based on the value of a control signal,

a first phase adjusting means for delaying the generated in-phase and quadration local spreading codes by a predetermined time,

a second phase adjusting means for advancing the generated in-phase and quadration local spreading codes by a predetermined time,

a first quadrature modulator for modulating the local signal by output signals of the first phase adjusting means,

a second quadrature modulator for modulating the local signal by output signals of the second phase adjusting means,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting an output signal of the first quadrature modulator in phase,

a third phase shifter for shifting an output signal of the second quadrature modulator in phase,

a fourth phase shifter for shifting the received signal in phase,

a first adder for adding an output signal of the first phase shifter and the output of the first quadrature modulator,

a second adder for adding the received signal and an output signal of the second phase shifter,

a third adder for adding the received signal and an output signal of the third phase shifter,

a fourth adder for adding the output signal of the second quadrature modulator and an output signal of the fourth phase shifter,

a first detector for detecting a signal level of an output of the first adder,

a second detector for detecting a signal level of an output of the second adder,

a third detector for detecting a signal level of an output of the third adder,

a fourth detector for detecting a signal level of an output of the fourth adder,

a first filter for performing a predetermined filtering processing with respect to an output of a first detector,

a second filter for performing a predetermined filtering processing with respect to an output of a second detector,

a third filter for performing a predetermined

filtering processing with respect to an output of a third detector,

a fourth filter for performing a predetermined filtering processing with respect to an output of a fourth detector,

a first norm circuit for computing a first norm based on outputs of the first and second filters,

a second norm circuit for computing a second norm based on outputs of the third and fourth filters, and

a control signal generating means for generating the control signal so as to reduce the difference between the first norm and second norm close to zero.

23. A spread spectrum receiver as set fourth in claim 22, wherein at least one of the first, second, third, and fourth detectors comprises a square-law detector.

24. A spread spectrum receiver as set fourth in claim 22, wherein the spreading code tracking means further comprises:

a means for removing D.C. offset from outputs of the first, second, third, and fourth filters.

25. A spread spectrum receiver as set forth in claim 17, wherein

the local spreading code tracking means

comprises:

a first local spreading code generator for generating an in-phase local spreading code based on a value of a control signal,

a second local spreading code generator for generating a quadration local spreading code based on the value of a control signal,

a first phase adjusting means for delaying the generated in-phase local spreading code by a predetermined time,

a second phase adjusting means for delaying the generated quadration local spreading code by a predetermined time,

a third phase adjusting means for advancing the generated in-phase local spreading code by a predetermined time,

a fourth phase adjusting means for advancing the generated quadration local spreading code by a predetermined time,

a first multiplier for multiplying the local signal by an output signal of the first phase adjusting means,

a second multiplier for multiplying the local signal by an output signal of the second phase adjusting means,

a third multiplier for multiplying the local signal by an output signal of the third phase adjusting means,

a fourth multiplier for multiplying the local signal by an output signal of the fourth phase adjusting means,

a first adder for adding the received signal and an output signal of the first multiplier,

a second adder for adding the received signal and an output signal of the second multiplier,

a third adder for adding the received signal and an output signal of the third multiplier,

a fourth adder for adding the received signal and an output signal of the fourth multiplier,

a first detector for detecting a signal level of an output of the first adder,

a second detector for detecting a signal level of an output of the second adder,

a third detector for detecting a signal level of an output of the third adder,

a fourth detector for detecting a signal level of an output of the fourth adder,

a first filter for performing a predetermined filtering processing with respect to an output of a first detector,

a second filter for performing a predetermined filtering processing with respect to an output of a second detector,

a third filter for performing a predetermined filtering processing with respect to an output of a third detector,

a fourth filter for performing a predetermined filtering processing with respect to an output of a fourth detector,

a first norm circuit for computing a first norm based on outputs of the first and second filters,

a second norm circuit for computing a second norm based on outputs of the third and fourth filters, and

a control signal generating means for generating the control signal so as to reduce the difference between the first norm and second norm close to zero.

26. A spread spectrum receiver as set fourth in claim 25, wherein at least one of the first, second, third, and fourth detectors comprises a square-law detector.

27. A spread spectrum receiver as set fourth in claim 25, wherein the spreading code tracking means further comprises:

a mean for removing D.C. offset from outputs of

the first, second, third, and fourth filters.

28. A spread spectrum receiver as set forth in claim 18, wherein

the direct conversion circuit comprises:

a multiplier for multiplying the local signal by the local spreading code and outputting the same as the reference local signal,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting the reference local signal in phase,

a first adder for adding the reference local signal and an output signal of the first shifter,

a second adder for adding the received signal and an output signal of the second phase shifter,

a first detector for detecting a signal level of an output of the first adder, and

a second detector for detecting a signal level of an output of the second adder.

29. A spread spectrum receiver as set forth in claim 28, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector, and

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector.

30. A spread spectrum receiver as set forth in claim 28, wherein

the direct conversion circuit further comprises:

a third detector for detecting a signal level of the received signal.

31. A spread spectrum receiver as set forth in claim 30, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector,

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector, and

a third filter for performing a predetermined filtering processing with respect to an output signal of the third detector.

32. A spread spectrum receiver as set forth in claim 19, wherein

the direct conversion circuit comprises:

a quadrature modulator for modulating the local signal by the in-phase and quadration local spreading

codes and outputting the same as the reference local signal,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting the reference local signal in phase,

a first adder for adding the reference local signal and an output signal of the first shifter,

a second adder for adding the received signal and an output signal of the second phase shifter,

a first detector for detecting a signal level Of an output of the first adder, and

a second detector for detecting a signal level of an output of the second adder.

33. A spread spectrum receiver as set forth in claim 32, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector and

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector.

34. A spread spectrum receiver as set forth in claim 32, wherein

the direct conversion circuit further comprises:

a third detector for detecting a signal level of the received signal.

35. A spread spectrum receiver as set forth in claim 34, wherein

the direct conversion circuit further comprises:

a first filter for performing a predetermined filtering processing with respect to an output signal of the first detector,

a second filter for performing a predetermined filtering processing with respect to an output signal of the second detector, and

a third filter for performing a predetermined filtering processing with respect to an output signal of the third detector.

36. A spread spectrum receiver as set forth in claim 17, wherein the spreading code included in the reference local signal is synchronized to the spreading code of the received signal.

37. A spread spectrum receiver as set forth in claim 17, wherein the carrier frequency of the received signal is approximately equal to the carrier frequency of the reference local signal.

38. A spread spectrum receiver for software radio receiving a spread spectrum signal spread in bandwidth

by a predetermined spreading code, comprising;

a local oscillator for outputting a local signal with a predetermined frequency,

a local spreading code tracking means for generating a local spreading code through a process, including digital processing, of synchronization and tracking based on the received signal and the local signal from the local oscillator, and

a direct conversion circuit for generating a reference local signal based on the local signal from the local oscillator and the local spreading code from the local spreading tracking means, generating two signals having a phase difference based on the received signal and the reference local signal, and despreading based on the two signals having a phase difference.

39. A spread spectrum receiver as set forth in claim 38, wherein

the local spreading code tracking means comprises:

a first local spreading code generator for generating an in-phase local spreading code based on a value of a control signal,

a second local spreading code generator for generating a quadration local spreading code based on the value of a control signal,

a first phase adjusting means for delaying the generated in-phase and quadration local spreading codes by a predetermined time,

a second phase adjusting means for advancing the generated in-phase and quadration local spreading codes by a predetermined time,

a first quadrature modulator for modulating the local signal by an output signals of the first phase adjusting means,

a second quadrature modulator for modulating the local signal by an output signal of the second phase adjusting means,

a first phase shifter for shifting the received signal in phase,

a second phase shifter for shifting an output signal of the first quadrature modulator in phase,

a third phase shifter for shifting an output signal of the second quadrature modulator in phase,

a fourth phase shifter for shifting the received signal in phase,

a first adder for adding an output signal of the first phase shifter and the output of the first quadrature modulator,

a second adder for adding the received signal and an output signal of the second phase shifter,

a third adder for adding the received signal and an output signal of the third phase shifter,

a fourth adder for adding the output signal of the second quadrature modulator and an output signal of the fourth phase shifter,

a first detector for detecting a signal level of an output of the first adder,

a second detector for detecting a signal level of an output of the second adder,

a third detector for detecting a signal level of an output of the third adder,

a fourth detector for detecting a signal level of an output of the fourth adder,

a first filter for performing a predetermined filtering processing with respect to an output of a first detector,

a second filter for performing a predetermined filtering processing with respect to an output of a second detector,

a third filter for performing a predetermined filtering processing with respect to an output of a third detector,

a fourth filter for performing a predetermined filtering processing with respect to an output of a fourth detector,

a first analog to digital (A/D) converting means for converting output analog signals of the first and second filters to digital signals,

a second A/D converting means for converting outputs analog signals of the third and fourth filters to digital signals, and

a digital processing means for generating the control signal so as to reduce the difference between the outputs of the first A/D converting means and second A/D converting means close to zero.

40. A spread spectrum receiver as set fourth in claim 39, wherein at least one of the first, second, third, and fourth detectors comprises a square-law detector.